# WILD TURKEY POULT PRODUCTION SURVEY
# 2005

Wild turkey brood surveys are valuable for examining population trends in various forest habitat regions of the state. These brood surveys are used to monitor poults per hen (PPH) which serves as an index to annual production. Prior to 1994, there were no statewide organized observations or recordings of wild turkey recruitment. As a result, there were only educated guesses based on weather patterns and casual observations. Beginning in 1994, the first standardized statewide survey was developed and implemented by Louisiana Department of Wildlife and Fisheries (LDWF), Wildlife Division personnel.

## METHODS

### Survey Procedure

In Louisiana, the primary breeding and egg laying period occurs from late March to mid-April. Most mortality among turkey poults occurs during the first 3 weeks of their lives. With this in mind, 1 July - 31 August was selected for the poult survey (a period when poults should be four weeks or older in age). As such, most poults that are observed during the survey should be alive during the spring hunting season. During July and August, Wildlife Division personnel and other selected individuals record the number of hens, poults, and gobblers observed. Date, parish, and/or Wildlife Management Area where the observation is made are also recorded. Observations are usually made incidentally to the routine activities of the observer.

### Study Area

The state is divided along parish lines into 5 regions based largely on historic habitat/geological regions (Figure 1).

*Northwest Loblolly/Shortleaf/Hardwood*

Bienville, Bossier, Caddo, Caldwell, Claiborne, DeSoto, Jackson, LaSalle, Lincoln, Red River, Union, and Webster parishes are included in this region. Wild turkeys are found throughout this region with the highest populations located in Bienville, Claiborne, Jackson, Lincoln, Union, and Webster parishes. Coastal Plain, Flatwoods, and Recent Alluvium soil areas are found in this region. These include soils with permeable and moderately permeable subsoils in the rolling hills area of the Coastal Plain, poorly drained forested soils in the Flatwoods areas, and alluvial soils derived from the Red and Mississippi Rivers in the recent alluvium forest habitat. There are 4,000,000 acres of forested habitat in this region, and 270,000 (6.8%) are publicly owned. General forest habitats consist of Loblolly/Shortleaf pine and Oak-Hickory. Loblolly pine is the dominant commercial tree species in this region.

*North Mississippi Delta*

Catahoula, Concordia, East Carroll, Franklin, Madison, Morehouse, Ouachita, Richland, Tensas and West Carroll Parishes comprise this region. Soil types found in this area are of the Recent Alluvium group which consist of silty and sandy soils of the Mississippi River in the better drained areas, clayey recent alluvial soils of the Mississippi River in the poorly drained areas, and alluvial soils derived from older sediments of the Arkansas and Ouachita Rivers.

Timber types consist mainly of bottomland hardwood and cypress and 199,000 (16.4%) of the 1,211,000 acres are publicly owned. Management of the remaining timber varies from select cutting to clear cutting. Much of the turkey habitat in this region was lost during the 1960s - 1980s for conversion to agriculture. Turkey populations are highest in the wooded habitat portions of Concordia, Madison and Tensas Parishes.

*Western Longleaf Pine*

Allen, Beauregard, Calcasieu, Evangeline, Grant, Jefferson Davis, Natchitoches, Rapides, Sabine, Vernon and Winn Parishes are included in this region. Soils located in this region are of the Coastal Plains, Mississippi Terrace and Loessial Hills, Flatwoods, Coastal Prairies, and Recent Alluvium types. The Coastal Plains soils have permeable to moderately permeable subsoils in gently rolling areas. The Flatwoods consist of the poorly drained forested soils, while the Coastal Prairie areas consist of prairie soils with very slowly permeable subsoils. The Recent Alluvium soil area was derived from the older and recent sediments of the Mississippi and Red Rivers. Historically, the major timber type was longleaf pine, but more recent timber practices have converted this area to loblolly pine plantations. Approximately 600,000 acres (13.0%) of the 4,593,000 of forested habitat are publicly owned. The U. S. Forest Service owns about 500,000 acres, and its long-range plans are to convert 50% of their acreage to longleaf pine. Bottomland hardwoods and cypress are found in the Recent Alluvium soils areas. Wild turkey populations have done very well in all parishes in this region except in the parishes of Jefferson Davis and Evangeline. Lack of a suitable habitat is believed to be the main reason for lack of or low populations in these parishes.

*Atchafalaya and South Mississippi Delta*

Ascension, Assumption, Avoyelles, Cameron, Iberia, Iberville, Jefferson, Lafayette, Lafourche, Orleans, Plaquemines, Pointe Coupee, St. Bernard, St. Charles, St. James, St. Landry, St. Martin, St. Mary, Terrebonne, Vermilion and West Baton Rouge Parishes are included in this region; however, coastal parishes do not provide turkey habitat. Soils in this area are mainly in the Recent Alluvium group. These include areas of silty and sandy recent alluvial soils of the Mississippi River which occur in the better drained areas and alluvial soils derived from older and recent sediments of the Mississippi and Red Rivers. Forest types include bottomland hardwoods and cypress. Forested habitat totals 2,056,000 acres of which 128,000 acres (6.2%) are publicly owned. Clear cutting and select cutting are the harvest procedures usually used. Parishes with best turkey populations include Avoyelles, Iberville, Pointe Coupee, St. Landry and West Baton Rouge.

*Southeast Loblolly*

East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa, Washington and West Feliciana Parishes comprise this region. Soils found in this area are of the Coastal Plains, Flatwoods, and Mississippi Terrace and Loessial Hills groups. Dominant forest types include loblolly pine and both upland and bottomland hardwoods. This region has the smallest public ownership of the 5 habitat regions. Only 59,000 (3.1%) of the 1,932,000 acres are publicly owned. The majority of the forested habitats are managed for pine production. All parishes in the Southeast Loblolly region have turkey, but the number of birds vary greatly, even

within a parish, due to habitat conditions.

**Production Assessment**

All Wildlife Management Area data were recorded by parish and included in the regional analysis. Poults per hen (PPH) were calculated as the number of poults divided by the number of hens observed for analysis unit. If an observer recorded poults but no hens, 1 hen was assigned to that observation. An analysis of covariance was conducted using MIXED Procedure models in SAS. Differences among years by habitat and habitat among years were determined using Contrast statements. Graphics use simple SE calculations for determination of confidence intervals. Observations with neither poults nor hens were not included in the PPH calculations. For our purposes, we ranked production into 5 categories: 1) excellent-4.0 PPH or higher, 2) very good- 3.3 - 3.9 PPH, 3) good- 2.6 - 3.2 PPH , 4) fair - 2.0- 2.5 PPH, or 5) poor- below 2.0 PPH (adapted from pers. comm. Southeast Wild Turkey Technical Committee). No statewide values are reported because of differences in acreage, number of observations, and production among habitat types. However, relative production for years was determined using 2 methods. (1) PPHs within habitats were ranked 1-5 (1 being highest) and summed. Years with lower values suggested better production. (2) The number of times PPHs of the 5 regions ranked 1st or 2nd within a year was determined. In this instance, the higher values suggested better production.

## RESULTS AND DISCUSSION

**2005 Production**

During 1 July – 31 August, 2005, 520 observations were recorded and used to determine PPH ratios. Differences in the PPH index were observed among some habitat regions ($P \leq 0.20$) (Table 1).

Table 1. Poults per hen (PPH) by habitat region, 2005.

| Habitat Region | No. Observations | PPH Ratio | Ranking[a] | 1994 -2004 PPH Average |
|---|---|---|---|---|
| S Atch /L Miss Delta | 61 | 3.6 | A | 2.6 |
| W Longleaf Pine | 108 | 3.5 | A B | 4.0 |
| NW Lob/Sh/Hdwood | 170 | 3.2 | A B | 3.5 |
| N Mississippi Delta | 140 | 3.0 | B | 3.7 |
| SE Loblolly Pine | 41 | 2.9 | A B | 2.3 |

[a] PPH Ratios with the same letter are not different ($P \leq 0.20$)

Wild turkey production in 2005 was fairly consistent across the state's five habitat regions (Table 1). Regional production ranged from good to very good (2.9 – 3.6 PPH). PPH ratios were very good in the Atchafalaya/Lower Mississippi Delta and Western Longleaf Pine regions. The remaining three habitat regions had good production. Production in 2005 was above the 11-year average in the Atachafalaya/Lower Mississippi Delta and Southeastern Loblolly Pine, and below average in the remaining three regions. On a statewide basis, 2005 production ranked about average for the 12-year period records have been maintained (Table 2).

Cumulative 1994-2005 data is summarized in Appendices 1-8.

Table 2. Statewide production ranking by year for the period 1994-2005

| **Rank and Sum Method[a]** | **Number of 1st or 2nd Rankings Method[b]** |
|---|---|

| Year | Sum | Year | Number |
|---|---|---|---|
| 1999 | 16 | 1999 | 3 |
| 1996 | 23 | 1996 | 2 |
| 1997 | 24 | 2002 | 2 |
| 2002 | 28 | 1997 | 2 |
| 1998 | 29 | 2005 | 1 |
| 2001 | 31 | 1994 | 1 |
| 2005 | 31 | 2001 | 1 |
| 1994 | 32 | 1995 | 1 |
| 1995 | 32 | 1998 | 3 |
| 2000 | 35 | 2000 | 0 |
| 2003 | 36 | 2003 | 0 |
| 2004 | 48 | 2004 | 0 |

[a] Lower values suggest better production.
[b] Higher values suggest better production.

Wild turkey production in Louisiana is thought to be influenced by weather conditions during two critical phases of the reproductive cycle - nest incubation and brood rearing. Hens incubate eggs from mid-April to early-June. Median hatch date in Louisiana is about 19 May. Below normal spring rainfall produces favorable conditions for successful hatching. Conversely, wet weather during incubation seems to be associated with low productivity. For instance, the lowest poult production in 12 years was recorded in 2004, a spring with exceptionally high rainfall.

Good brood rearing conditions occur when rainfall is normal or above normal during mid-June through August. Wet growing season conditions promote the growth of ground-level vegetation and high insect populations. Lush ground-level vegetation provides escape cover for poults and fosters development of high insect populations. Insects are the primary food of developing poults.

Rainfall during the 2005 incubation period was below normal (61% of normal) across the entire state (Table 3). This should have contributed to good hatching success. However, below normal rainfall (84% of normal) across the state during the brood rearing period produced less than ideal conditions for poult survival, particularly during the first weeks post-hatch (June). July was the wettest month of the growing season with three regions having above average rainfall.

Table 3. Rainfall totals, expressed as a percentage of normal for habitat regions, April – August, 2005.

| Month | SE Loblolly Pine | S Atch /L Miss Delta[a] | W Longleaf Pine[a] | NW Lob/Sh/Hdwood[a] | N Mississippi Delta[a] |
|---|---|---|---|---|---|
| April | 116 | 30-97 | 64-39 | 87-111 | 79-46 |
| May | 73 | 68-86 | 42-42 | 62-18 | 83-34 |
| June | 64 | 68-93 | 41-49 | 34-27 | 34-52 |
| July | 124 | 68-120 | 98-87 | 123-110 | 117-117 |
| August | 94 | 71-84 | 128-71 | 106-111 | 84-77 |

[a] Range is provided because of overlap of weather data regions with physiographic regions used for this survey

*Note: PPH values represent an average across a broad region. There will be areas within a region that had higher or lower production than the regional average. Factors such as habitat quality and local weather events may influence production in a specific area.*

**Figure 1**

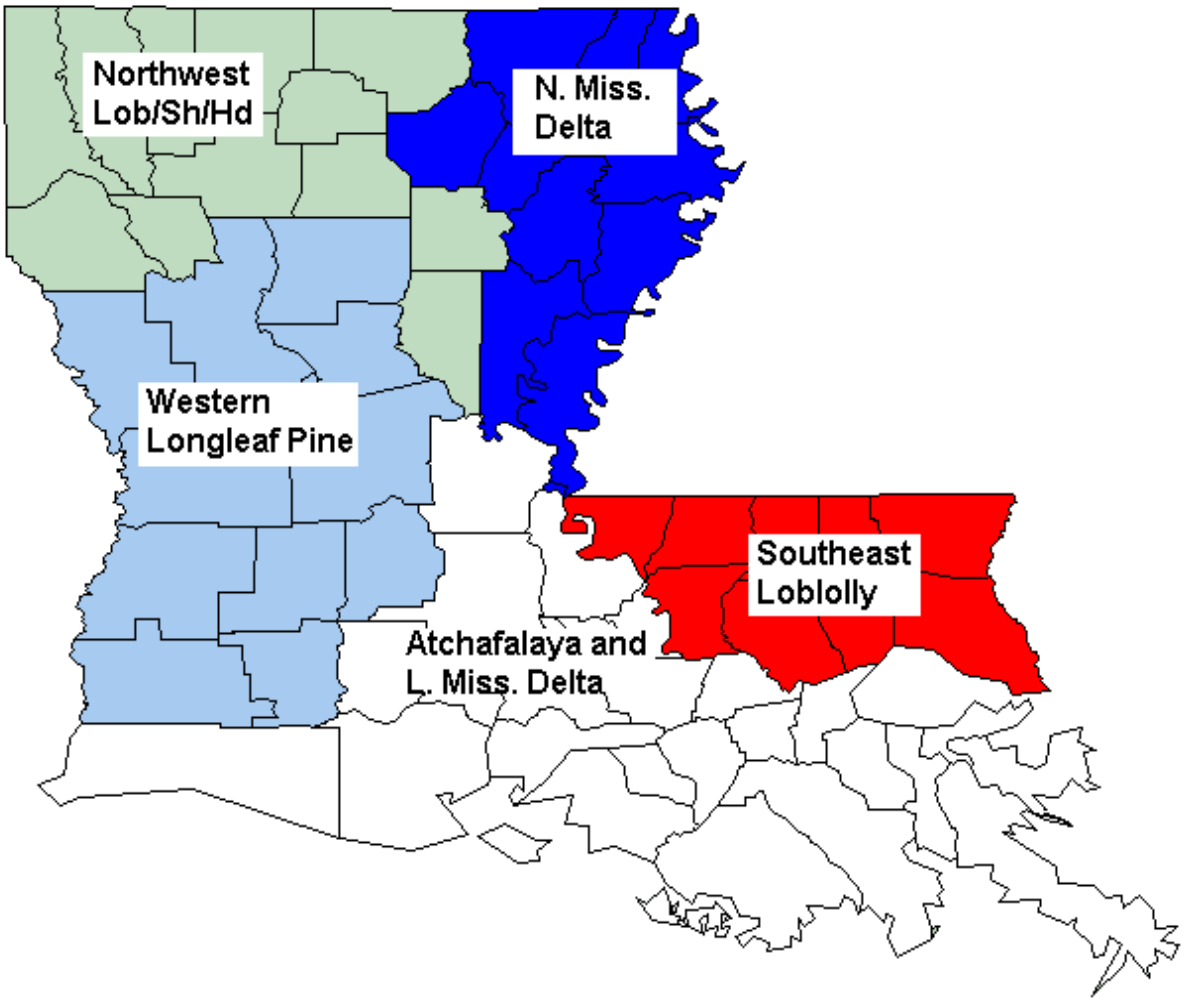
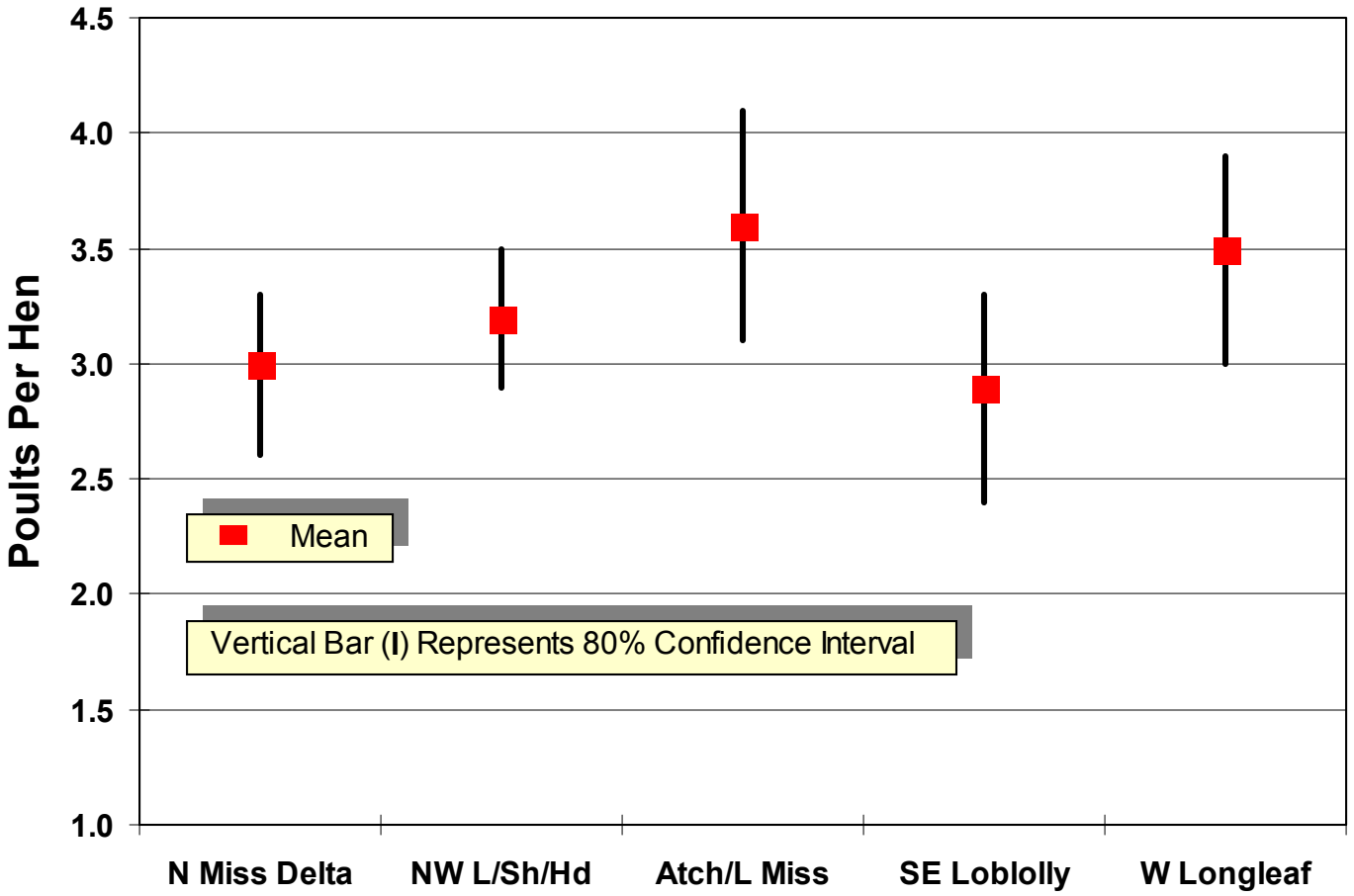

Northwest
Lob/Sh/Hd
N. Miss.
Delta
Western
Longleaf Pine
Southeast
Loblolly
Atchafalaya and
L. Miss. Delta

Figure 2

# Turkey Production Index
# 2005



**Appendices 1 – 8**

**Wild Turkey Poult Survey Data, 1994 – 2005**

Appendix 1. Average poults per hen (PPH) by habitat/region for the period 1994-2005.

| Habitat/Region | 11 -Year Mean Poults Per Hen | Comparisons[a] |
|---|---|---|
| W Longleaf Pine | 4.0 | A |
| N Mississippi Delta | 3.7 | A B |
| NW Lob/Sh/Hdwood | 3.5 | B |
| S Atch/L Mississippi Delta | 2.6 | C |
| SE Loblolly Pine | 2.3 | D |

[a] Values within a Habitat/Region with the same letter are not different at $P \leq 0.20$.

Appendix 2. Poults per hen (PPH) by year and habitat for the period 1994-2005.

| Year | Habitat/Region | Poults Per Hen | Comparisons[a] |
|---|---|---|---|
| 1994 | W Longleaf Pine | 4.7 | A |
| | SE Loblolly Pine | 3.8 | A |
| | S Atch/L Miss Delta | 2.6 | B |
| | NW Lob/Sh/Hdwood | 1.9 | B C |
| | N Mississippi Delta | 1.5 | C |
| 1995 | W Longleaf Pine | 4.5 | A |
| | S Atch/L Miss Delta | 4.4 | A B |
| | N Mississippi Delta | 3.6 | A B |
| | NW Lob/Sh/Hdwood | 2.9 | A B |
| | SE Loblolly Pine | 1.6 | C |
| 1996 | W Longleaf Pine | 5.2 | A |
| | NW Lob/Sh/Hdwood | 4.9 | A |
| | S Atch/L Miss Delta | 3.0 | B |
| | N Mississippi Delta | 2.8 | B |
| | SE Loblolly Pine | 2.3 | B |
| 1997 | W Longleaf Pine | 5.1 | A |
| | N Mississippi Delta | 4.3 | A B |
| | NW Lob/Sh/Hdwood | 3.4 | A B |
| | SE Loblolly Pine | 3.0 | B C |
| | S Atch/L Miss Delta | 1.9 | C |
| 1998 | N Mississippi Delta | 5.2 | A |
| | S Atch/L Miss Delta | 4.1 | A B |
| | NW Lob/Sh/Hdwood | 4.0 | A B |
| | W Longleaf Pine | 2.8 | B C |
| | SE Loblolly Pine | 1.8 | C |
| 1999 | N Mississippi Delta | 5.2 | A |
| | S Atch/L Miss Delta | 5.1 | A |
| | W Longleaf Pine | 4.4 | A |
| | NW Lob/Sh/Hdwood | 4.3 | A |
| | SE Loblolly Pine | 2.7 | B |
| 2000 | NW Lob/Sh/Hdwood | 3.8 | A |
| | N Mississippi Delta | 3.7 | A |
| | W Longleaf Pine | 2.9 | B |
| | S Atch/L Miss Delta | 2.4 | B C |
| | SE Loblolly Pine | 1.9 | C D |

Appendix 2 cont'd. Poults per hen (PPH) by year and habitat for the period 1994-2004.

| Year | Habitat/Region | Poults Per Hen | Comparisons[a] |
|---|---|---|---|
| 2001 | NW Lob/Sh/Hdwood | 3.4 | B |
| | N Mississippi Delta | 7.0 | A |
| | W Longleaf Pine | 3.9 | B |
| | S Atch/L Miss Delta | 1.6 | C |
| | SE Loblolly Pine | 2.0 | C |
| 2002 | NW Lob/Sh/Hdwood | 3.2 | B |
| | N Mississippi Delta | 5.4 | A |
| | W Longleaf Pine | 5.7 | B |
| | S Atch/L Miss Delta | 1.0 | C |
| | SE Loblolly Pine | 2.3 | C |
| 2003 | NW Lob/Sh/Hdwood | 2.8 | B |
| | N Mississippi Delta | 4.6 | A |
| | W Longleaf Pine | 4.3 | A |
| | S Atch/L Miss Delta | 1.2 | C |
| | SE Loblolly Pine | 2.6 | B |
| 2004 | NW Lob/Sh/Hdwood | 3.7 | A |
| | N Mississippi Delta | 2.7 | B |
| | W Longleaf Pine | 1.7 | C |
| | S Atch/L Miss Delta | 1.5 | C |
| | SE Loblolly Pine | 1.2 | C |
| 2005 | NW Lob/Sh/Hdwood | 3.2 | A B |
| | N Mississippi Delta | 3.0 | B |
| | W Longleaf Pine | 3.5 | A B |
| | S Atch/L Miss Delta | 3.6 | A |
| | SE Loblolly Pine | 2.9 | A B |

[a] Values within a Habitat/Region with the same letter are not different at $P \leq 0.20$

Appendix 3. Poults per hen (PPH) by habitat by year for the period 1994-2005

| Habitat/Region | Year | Poults Per Hen | Comparisons[a] |
|---|---|---|---|
| N Mississippi Delta | 2001 | 7.0 | A |
| | 2002 | 5.4 | B |
| | 1999 | 5.2 | B C |
| | 1998 | 5.2 | B C D |
| | 2003 | 4.6 | B C D |
| | 1997 | 4.3 | C D |
| | 2000 | 3.7 | D E |
| | 1995 | 3.6 | D E F |
| | 2005 | 3.0 | F |
| | 1996 | 2.8 | E F |
| | 2004 | 2.7 | F |
| | 1994 | 1.5 | G |
| NW Lob/Sh/Hdwood | 1996 | 4.9 | A |
| | 1999 | 4.3 | B C |
| | 1998 | 4.0 | B |

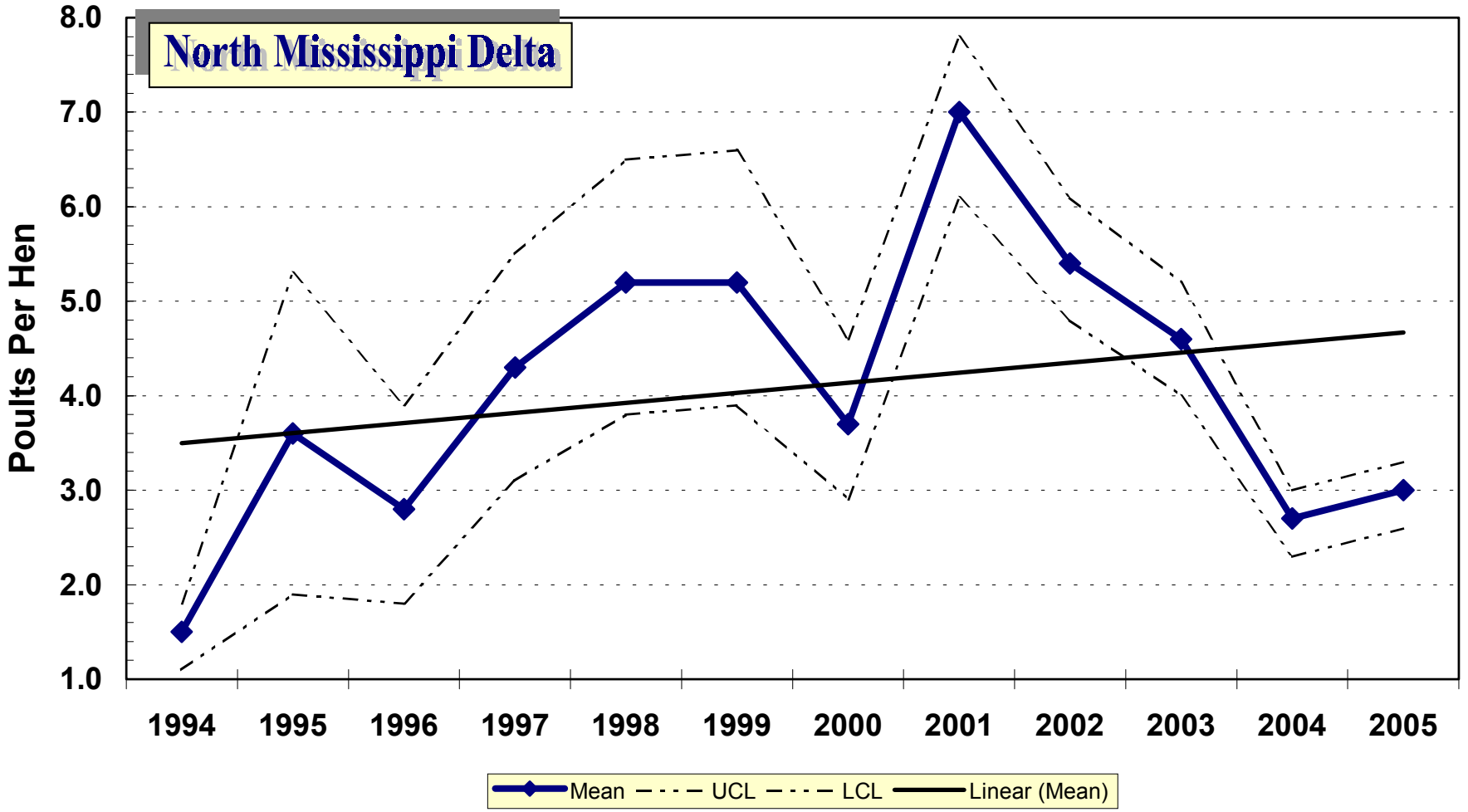
Appendix 3 cont'd. Poults per hen (PPH) by habitat by year for the period 1994-2005

| Habitat/Region | Year | Poults Per Hen | Comparisons[a] |
|---|---|---|---|
| NW Lob/Sh/Hdwood | 2000 | 3.8 | B |
| | 2004 | 3.7 | B C D |
| | 2001 | 3.4 | B C D |
| | 1997 | 3.4 | B C D |
| | 2005 | 3.2 | C D |
| | 2002 | 3.2 | B C D |
| | 1995 | 2.9 | D |
| | 2003 | 2.8 | D |
| | 1994 | 1.9 | E |
| S Atch/L Miss Delta | 1999 | 5.1 | A |
| | 1995 | 4.4 | A B |
| | 1998 | 4.1 | A B |
| | 2005 | 3.6 | B |
| | 1996 | 3.0 | B C |
| | 1994 | 2.6 | C |
| | 2000 | 2.4 | C |
| | 1997 | 1.9 | C D |
| | 2001 | 1.6 | C D |
| | 2004 | 1.5 | D |
| | 2003 | 1.2 | D |
| | 2002 | 1.0 | D |
| SE Loblolly Pine | 1994 | 3.8 | A |
| | 1997 | 3.0 | A B |
| | 2005 | 2.9 | B |
| | 1999 | 2.7 | B |
| | 2003 | 2.6 | B C |
| | 1996 | 2.3 | B C D |
| | 2002 | 2.3 | B C D |
| | 2001 | 2.0 | C D |
| | 2000 | 1.9 | C D |
| | 1998 | 1.8 | C D |
| | 1995 | 1.6 | D E |
| | 2004 | 1.2 | E |
| W Longleaf Pine | 2002 | 5.7 | A |
| | 1996 | 5.2 | A B |
| | 1997 | 5.1 | A B |
| | 1994 | 4.7 | A B |
| | 1995 | 4.5 | B |
| | 1999 | 4.4 | A B C |
| | 2003 | 4.3 | B C |
| | 2001 | 3.9 | C D |
| | 2005 | 3.5 | D |
| | 2000 | 2.9 | D E |
| | 1998 | 2.8 | C D |
| | 2004 | 1.7 | E |

[a] Values within a Habitat/Region with the same letter are not different at $P \leq 0.20$

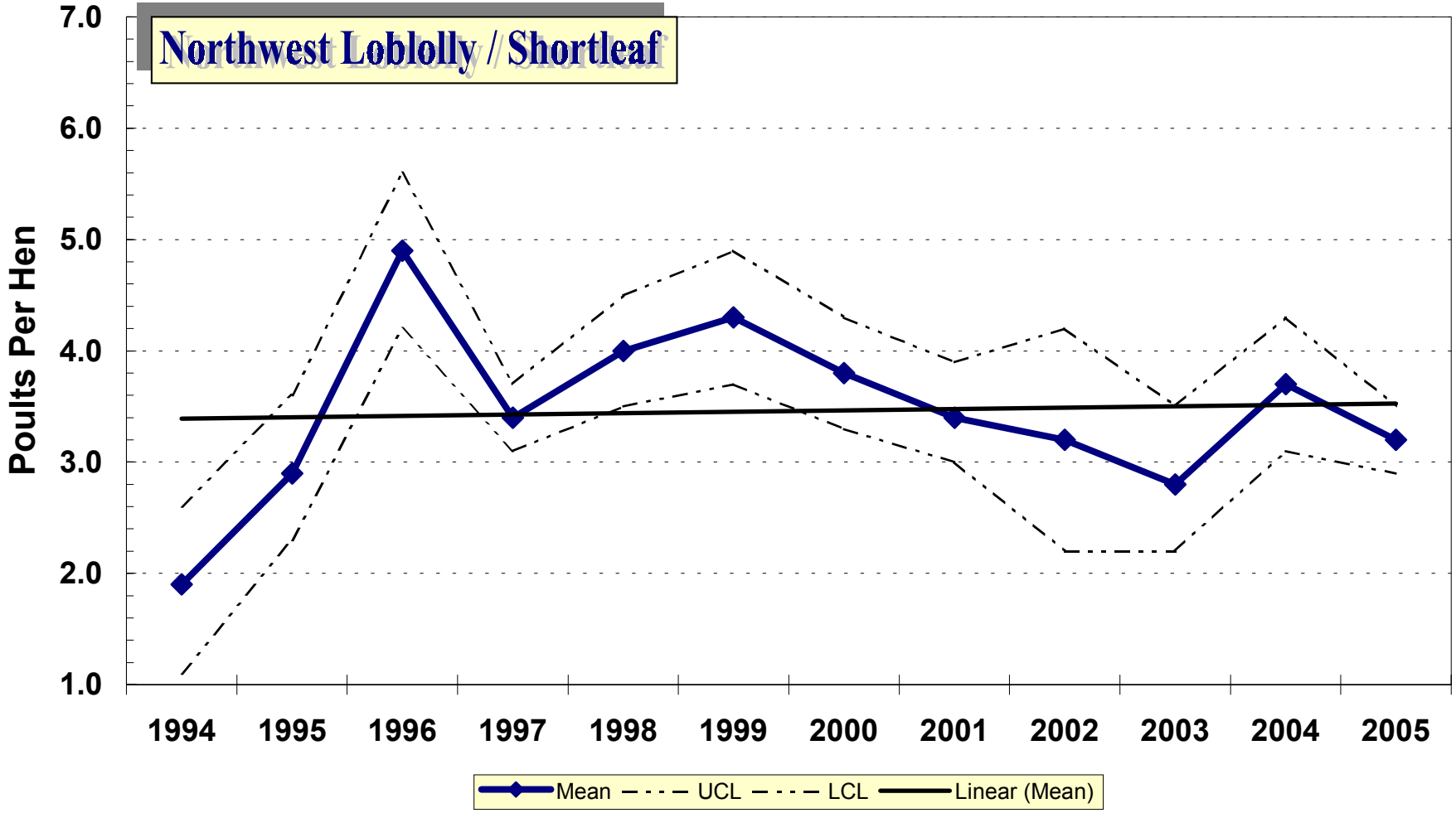
Appendix 4

# Turkey Production Index



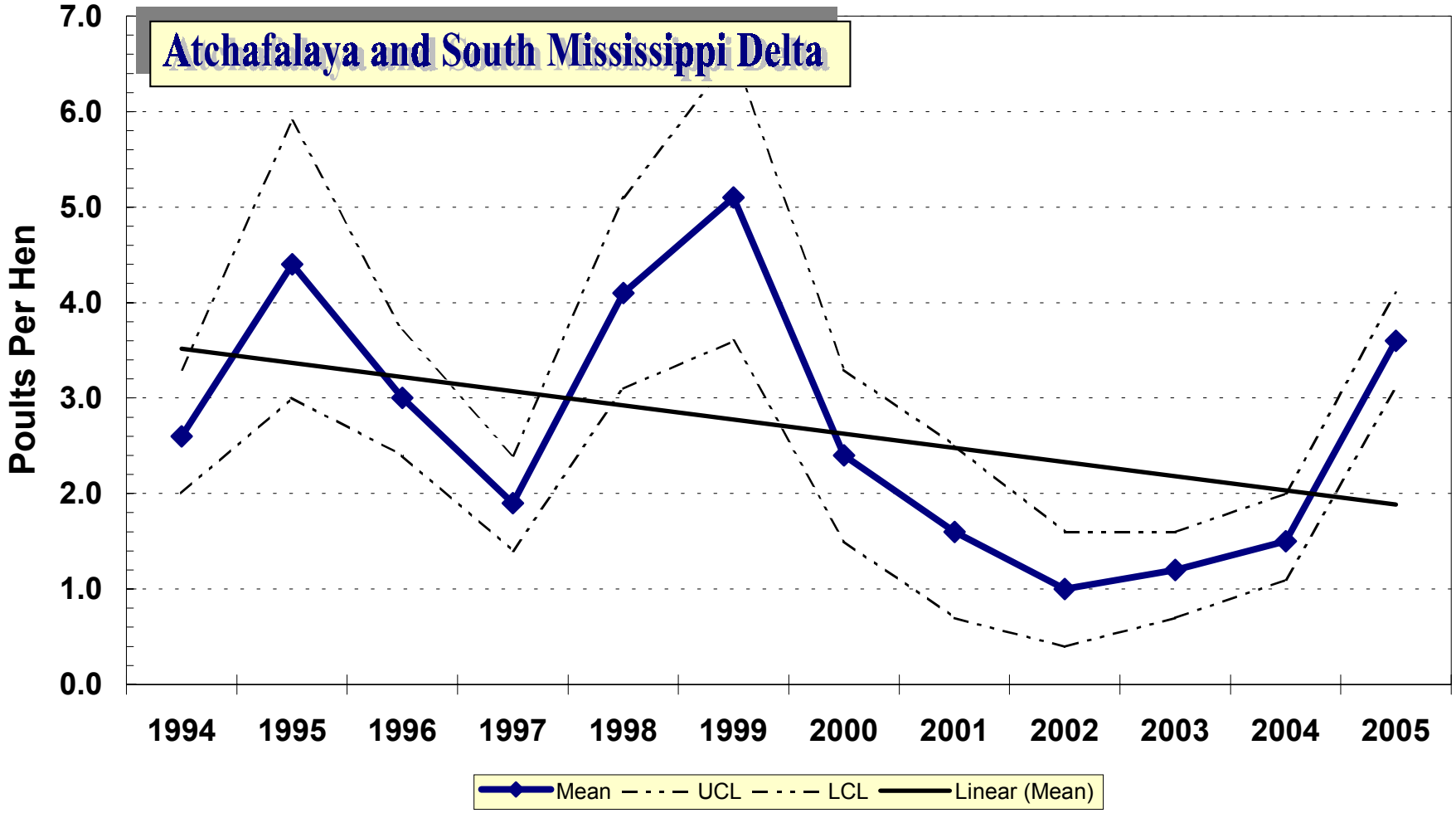
Appendix 5

# Turkey Production Index



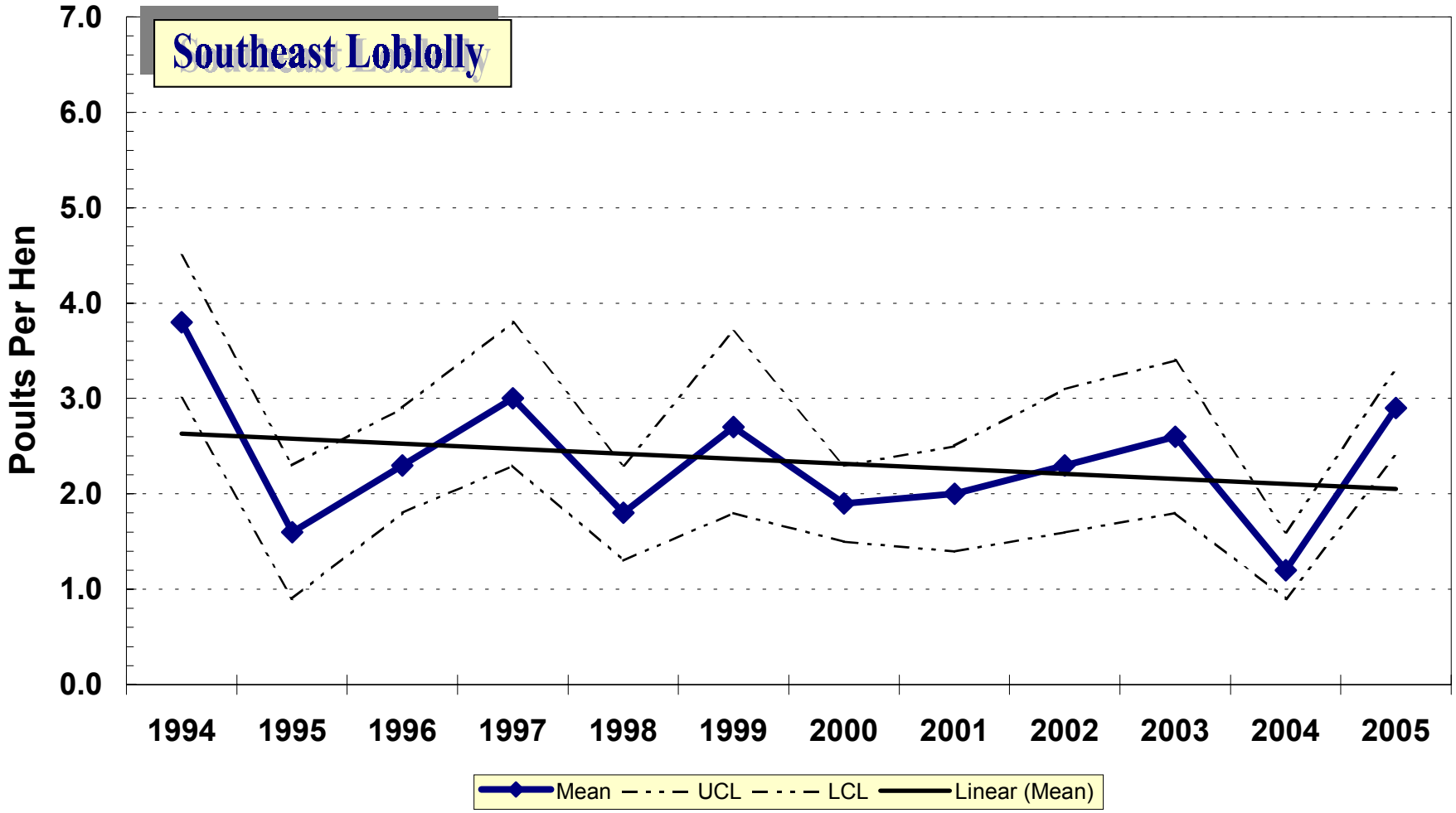
Appendix 6

# Turkey Production Index



Appendix 7

# Turkey Production Index



Appendix 8

# Turkey Production Index